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HEADS UP!

## CoilViz moves to Transportation Security Laboratory

The ultra-low field NMR relaxometer known as "CoilViz" was recently moved to the Transportation Security Laboratory (TSL) on the grounds of the Federal Aviation Authority research center in Atlantic City, New Jersey. The device was put through both a data collection effort by Los Alamos and a developmental testing and evaluation protocol by TSL.

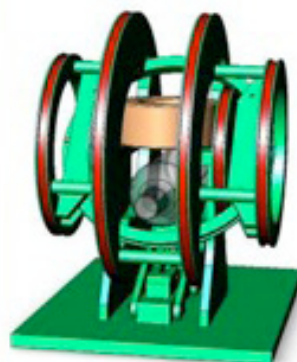
CoilViz was built as part of the larger MagViz effort and is designed to inspect single bottles of liquids, and discriminate them against a threat database of 1-2 dozen liquids. CoilViz was designed to be able to scan through opaque or metalized packaging. The instrument can scan bottles in original packaging, without opening, in less than 30 seconds. The instrument operates using room-temperature detection coils.

The instrument was at TSL from August 8-16, during which it reliably scanned ~900 bottles of material including ~500 items from the TSL database of streams of commerce, duty-free, and medical liquids. It also scanned ~400 bottles of threat liquids. The bottles varied in shape, size, and amount full.

The system performed very well, with a low-false positive rate (<5%) and the ability to reliably catch 6 threat liquids provided by TSL at the 80% or better level.

While many threats are detected reliably by the present parameter space, the CoilViz team continues to work to add additional classification parameters and further increase the number of threats that can be detected while maintain the small footprint and detection speed. Future work may also focus on the addition of an imaging capability, so that multiple bottles and "3-1-1" bags can be screened.

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Left: About the size of a hotel refrigerator, CoilViz is able to scan unopened bottles from ~0.1-1 liter in less than 30 seconds. Center: Schematic of the coils. Right: Some of the 500 items CoilViz has scanned.

## Coming soon: Los Alamos's Environmental Recertification Audit

The "ISO 14001 Environmental Recertification Audit" will occur February 13 -17. Most likely it will touch every corner of the Laboratory, including divisions associated with ADEPS. This column is meant to provide you with basic information as to what the audit is all about and what important things you should know. E-mail updates will be forwarded to our divisions as final audit plans and schedules become available.

First and foremost, please consider familiarizing yourself with the LANL EMS webpage off the LANL home page (click on the "Environment" tab at the top of the page); as with most audits, workers are not always expected to know every policy, detail or plan – but- they should know how to find them!

### Each worker should be able to:

- Describe their role and function at LANL,
- Discuss how their work may interact with the environment (directly and indirectly), and
- Explore what steps they take or could take to improve environmental performance.

### Each worker should be able to describe/able to find:

• Laboratory Environmental Governing Policy, which states:  
*"We approach our work as responsible stewards of our environment to achieve our mission. We prevent pollution by identifying and minimizing environmental risk. We set quantifiable objectives, monitor progress and compliance, and minimize consequences to the environment, stemming from our past, present, and future operations. We do not compromise the environment for personal, programmatic, or operational reasons."*

• Their EMS point-of-contact:  
ADEPS POCs: MST – Jim Coy; MPA – Cathy Padro; LANSCE – Frances Aull; Physics – Steve Glick

• Their EMS Environmental Action Plan actions (if they have actions):  
The FY12 ADEPS EAP and much more can be found within the Lab's EMS Web page at [int.lanl.gov/environment/ems/index.shtml](http://int.lanl.gov/environment/ems/index.shtml).



**'Most likely (the audit) will touch every corner of the Laboratory, including divisions associated with ADEPS.'**

More information on our FY12 Environmental Action Plan and the various actions certain individuals will need to take will be distributed shortly.

- Their current/up-to-date work procedures
- Any measuring and testing equipment used in activities that may interact with the environment and the associated M&TE calibration records
- Their environmental records:  
It is strongly encouraged that all staff have their required Environmental Awareness Training (#32461) completed; annual refresher course (#52121) is also available in UTrain.

### Each manager should be able to describe:

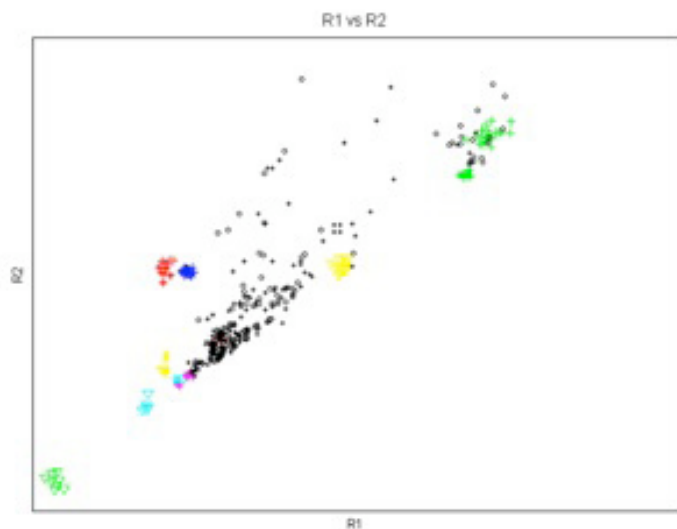
- Their organization's activities that may interact with the environment,
- Their management role in activities that may interact with the environment,
- Their commitment to the Laboratory Governing Policy and their EMS EAP,
- Examples of improvements to their organization's environmental performance, and
- Outcomes of the management review of the EMS and previous year's EAP (this can be found at the LANL EMS Web page at [int.lanl.gov/environment/ems/index.shtml](http://int.lanl.gov/environment/ems/index.shtml), under the Directorate Achieves

link, click on ADEPS, then on FY11 TR 5.2 to find the review document).

The EMS program at LANL conforms to the ISO 14001 standard as required within the LANL/NNSA Prime Contract with the DOE. The specific requirement calls for an independent third-party recertification audit of the entire organization once every three years.

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). International Standards covering environmental management are intended to provide organizations with the elements of an effective environmental management system (EMS) that can be integrated with other management requirements and help organizations achieve environmental and economic goals.

*Steve Glick, ADEPS EMS point of contact*



Relaxation parameters of benign items (black symbols) vs. threat liquids (colored symbols) recorded while at TSL.

**CoilViz...** Researchers include M. Espy, A. Matlashov, M. Peters, H. Sandin, L. Schultz, A. Urbaitis, P. Volegov (all Applied Modern Physics, P-21). The DHS funds the research, which supports the Laboratory's global security mission, and a key capability of the Science of Signatures thrust.

*Technical contact: M. Espy*

## Successful NIF-5 shot day at Omega Laser Facility

The NIF-5 project, responsible for high energy density physics (HED) experiments being performed at the National Ignition Facility (NIF), recently had a successful shot day at the Omega Laser Facility in Rochester, NY.

The event was a continuation of the campaign begun Feb. 10, the purpose of which is studying the effect of wall albedo on supersonic radiation flow down a gold tube filled with low-density  $\text{SiO}_2$  foam. The results obtained will improve their modeling of supersonic radiation flow, and could have a major impact on other HED experiments the project plans to field on NIF.

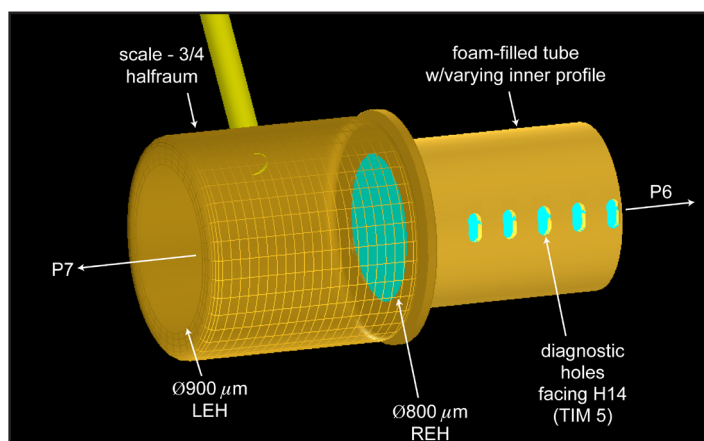
As before, the researchers modified the wall albedo of the gold tube by varying its inner profile, although this time maintaining a constant inner surface area and foam mass to isolate the effect of the inner profile by varying the cylinder length and foam density. They maintained a constant radiation source: the halfraum, laser entrance hole (LEH) and rear exit hole (REH) were the same for all cases. The data obtained will be used to validate codes.

In addition to their primary goal, the researchers used a few shots to

obtain the x-ray spectrum of  $\text{SbI}_3$  (antimony triiodide), a backlighter material being considered as a replacement for CsI (cesium iodide) in its NIF-5 absorption spectroscopy diagnostic. Enough data was obtained to allow them to make this determination.

The team (Scott Evans, Nick Lanier, Tom Sedillo, and Principal Investigator Martin Taccetti (all Plasma Physics, P-24), Bob Peterson (XTD-6), and Robert Sanchez (MST-7), met its campaign goals for the shot day, achieving 14 shots with nice data return on all of its primary diagnostics. For the radiation flow experiments, this included Dante, a soft x-ray imager mounted on a framing camera, a streaked x-ray imager mounted on a streak camera. For the backlighter spectra, this included the NIF-5 the Henway spectrometers. This effort was funded by Kim Scott, C-4 Program Manager.

*Technical contact: J. Martin Taccetti, P-24*



Target schematic. Halfraum with cylinder is mounted along Omega P6-P7 axis, with LEH facing port P7. Diagnostic holes face port H14, and back end faces port P6.

## Neutrino Days at Sanford Underground Laboratory

The fourth annual Neutrino Day was held this past summer at the Sanford Underground Laboratory in Lead, South Dakota and to help with the festivities, the Weak Interaction team at Los Alamos sent three postdoctoral associates. On Friday, South Dakota Public Radio's Innovation program broadcast a live interview with South Dakota Governor Dennis Daugaard, from the area just outside the MAJORANA temporary cleanroom. There, the South Dakota Science and Technology Authority presented him with a plaque containing a piece of the detector from Ray Davis's Nobel prize-winning experiment on solar neutrinos.

The festivities continued the following day when visitors turned out to get a view of the MAJORANA lab space and to learn about the other experiments going on at the laboratory. A live, high-definition

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*Los Alamos postdoctoral researcher Melissa Boswell discusses radioactivity in ordinary materials with visitors at Neutrino Day.*

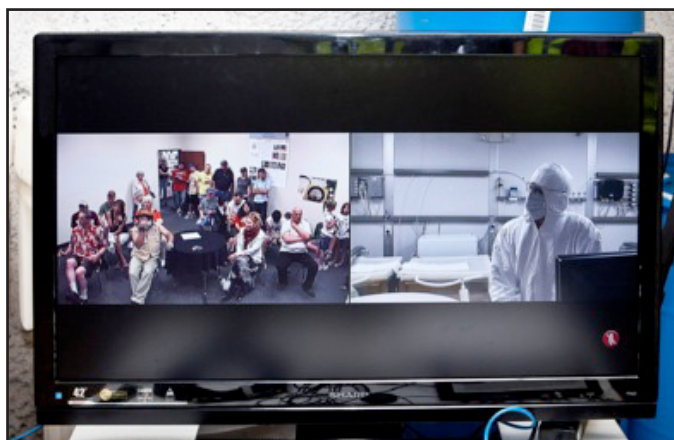
**Neutrino...** video feed allowed visitors to see the MAJORANA electroforming lab located at the 4,850-foot level of the mine. MAJORANA chemist Cabot-Ann Christofferson and physicist John Orrell were stationed underground to show the many virtual visitors the underground lab space. The two took turns showing visitors around the class 1000 cleanroom. Former Los Alamos postdoctoral researcher Vincente Giuseppe (now a faculty member at the University of South Dakota) joined Los Alamos postdocs Melissa Boswell, David Steele, and Mary Kidd (all Neutron Science and Technology, P-23) above ground in answering questions and facilitating discussion without the underground crew. In total, 578 visitors turned out to learn about the science at the Sanford Laboratory.

The Majorana Project at LANL is led by Steve Elliott (P-23) and funded by the Laboratory Directed Research and Development program.

*Technical contact: Steve Elliott*



*Melissa Boswell and former Los Alamos postdoctoral researcher Vince Guiseppe facilitate a discussion between visitors and scientists stationed at the Temporary Majorana Cleanroom, located 4,850 feet underground in the Sanford Mine. Mary Kidd, another Los Alamos postdoctoral researcher, is using a Majorana poster to explain the experiment to an interested visitor.*



*Visitors get a rare treat to watch a scientist in action in an underground cleanroom. On the left, visitors to the Sanford Lab are able to watch and communicate with scientists underground in the Sanford Mine. On the right is a PNNL scientist, John Orrell checking bath temperatures in the Majorana cleanroom. The cleanroom is used to electroform copper; by doing this underground researchers will be able to reduce the radioactivity to the level of 0.3  $\mu\text{Bq/kg}$ .*

## Gemini experiment optical probe diagnostic selected

Optical velocimetry is one of the most commonly fielded diagnostics in dynamic materials experiments. By measuring the velocity of a shock-driven material surface, experimenters can deduce information about the thermodynamic states reached by the material, any damage induced by the shock, and any ejecta particles thrown off of the surface. As many dynamic material experiments involve complicated – and evolving geometries – the ability to record a large number of channels of velocimetry simultaneously would be a great advantage.

Recently, a large group from P, WX, HPC, MPA, MST, PF, and W divisions, with collaborators from National Security Technologies' (NSTec) Los Alamos and Las Vegas groups, fielded several advanced optical designs in a series of dynamic tests. Each candidate enabled the simultaneous measurement of more than forty channels of photonic Doppler velocimetry (PDV) while remaining small in radius (which enabled measurement over long tracking distances). The figures show photographs of the three designs. All three probes were fielded within explosively-driven copper hemispheres. All three gave data of comparably high quality, and so all are available for future experiments requiring a large (40-100) number of PDV points. AOC candidate 2 (also known as the fisheye probe), designed by Brent Froggett from NSTec-LAO has been selected to be fielded on the first Gemini Experiment. This probe is the smallest and supports both a high density of angular coverage and a significant number of spare fibers.

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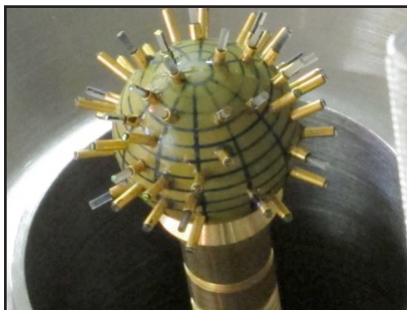


The "fisheye" probe (designed by Brent Froggett, NSTec-Los Alamos) used a fisheye lens and mirrors to image a fiber array onto a dynamically-driven surface.



At left, the "bugeye" probe (designed by Bob Malone, NSTec-Los Alamos) combined lenses and a prism to image a fiber array onto a surface.

Below, the "discrete" probe (designed by Lori Primas, WX-4) used discrete optical probes mounted within a plastic ball to interrogate the surface at a number of points.



**Gemini...** David Holtkamp (P-23) led the development of the probes, and Lori Primas and Mike Shinas (WX-4) led the tests. This work was funded by the dynamic plutonium experiment program (Jeffrey Paisner, program director).

*Technical Contact: Michael Furlanetto*

## Celebrating service

Congratulations to the following Physics Division employees celebrating a service anniversary this month:

Tom Sedillo, P-24	35 years
Jonathan Workman, P-24	15 years



is published by the Experimental Physical Sciences Directorate. To submit news items or for more information contact Karen Kippen, EPS Communications Team, 606-1822, or [kippen@lanl.gov](mailto:kippen@lanl.gov). LALP-12-006

To read past issues, please see [www.lanl.gov/orgs/p/flash\\_files/flash.shtml](http://www.lanl.gov/orgs/p/flash_files/flash.shtml).



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## Meeting planning services available

Got a conference that needs organizing, an event to be planned?

Rose Romero, the ADEPS meeting coordinator, can help.



With 15 years of Los Alamos conference planning experience, Romero has assisted staff members in planning conferences both large and small, from locally held meetings with a dozen participants to international conferences for hundreds of attendees. Knowledgeable in the Laboratory's conference management policies and associated allowable conference costs, she can help in overseeing the details that ensure a smooth, successful event.

Romero can assist with developing and overseeing allocated workshop budgets, obtaining the necessary cost codes for workshop funding, negotiating and overseeing contracted food services, and in planning and executing workshop and conference web sites. Her experience includes arranging for transportation, conference facilities, and accommodation and preparing pre-conference materials such as invitation letters, badges, folders, and participant lists. During the workshop, she can manage the registration desk, help with setting up meeting rooms, and with compiling agendas, abstracts, and related materials into post-conference documents.

"I love the variety and working on things from start to finish," Romero said. "Meeting planning is like putting together a puzzle. Every piece must fit the puzzle for the puzzle to be successfully complete."

Romero can be reached by calling 665-7657 or emailing [rbromero@lanl.gov](mailto:rbromero@lanl.gov).

## HeadsUP!

### Call issued for 2012 pollution prevention award nominations

The Lab is now accepting nominations for 2012 pollution prevention awards. P2-related projects and activities that have reduced pollution, enhanced operations, saved money, or reduced environmental impacts are eligible for nomination. Nominations are due by the end of the work day on February 10. Questions? Contact the Pollution Prevention Program Office at 5-8855 or [p2awards@lanl.gov](mailto:p2awards@lanl.gov).